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WITH TUBERCULOUS  
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## THE TREATMENT OF ABSCESS

IN CONNECTION WITH TUBERCULOUS JOINT DISEASE.\*

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It appears from most that has been written upon the question of the treatment of abscess in connection with tuberculous joint disease and from the methods suggested, that the true condition in such cases has not been fully recognized; such an abscess being treated, as a rule, as a local condition, differing in no essential feature from an acute pyogenic abscess. At least, no difference has been recognized as being of sufficient importance to suggest a different method of treatment, and usually some operative procedure is advised.

When serious consideration has been accorded the ætiological factor in tuberculous abscess, the argument has been that when such an abscess was left undisturbed for any considerable length of time the risk of general tuberculous infection was greatly increased. Sepsis has also been an important, perhaps the most important, con-

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sideration in the treatment of such abscesses, and the operations are done in most instances for the relief of that condition, which in a great majority of cases does not exist. During a service of several years at the New York Orthopædic Dispensary and Hospital, where a non-interference plan is carried out in the treatment of tuberculous abscess, I have seen many abscesses develop, increase, and, in some instances, to a large size, and exist for months or even years, when they would disappear by spontaneous absorption, or open spontaneously and discharge for a time, without the slightest effort on the part of the surgeon to interfere with their course by any operative procedure.

There were no symptoms of septic infection in these patients in most instances, their temperature did not indicate it, nor did the condition of their general health. On the contrary, in the great majority of instances their diseased joints responded to the mechanical protection afforded them quite as readily and the condition of their general health was quite as good as in patients suffering from the same disease in connection with which abscess did not exist.

Thus I realized the fact that abscess in connection with tuberculous joint disease is a very different process from that of an acute pyogenic abscess, producing different symptoms and having a different cause, and that no treatment could be most rational that was not directed toward relieving the cause—the local tuberculous inflammation.

It seems unreasonable as well as unfair to the patients to assume because these two conditions have one feature in common, and in most instances but one—a fluctuating tumor—that they are practically the same, both local con-

ditions, with similar causes, easily removable by any one of many operative procedures advised for their treatment, such as simple incision, incision and curettage, etc. In the case of the acute pyogenic abscess such operations meet every indication for treatment, while in that of the tuberculous abscess, as a rule, they do not meet one.

There is an essential difference between the contents of a tuberculous abscess and the septic material (pus) contained in an acute pyogenic abscess.

“A collection of pus in a cavity, the result of a morbid process” (Dunglison), is one thing, but a collection of non-septic material in a cavity, the result of a tuberculous inflammation, is quite another.

It has been demonstrated by many observers—Cheyne, Warren, Alexander Ogston, and others—that most tuberculous abscesses are absolutely sterile (some state that all are); that is, that they contain no pyogenic bacteria.

Alexander Ogston (*British Medical Journal*, November 12, 1881) reported the results of the examination of a series of abscesses, eighty-two in all. Thirteen were cold abscesses having a duration of months and occurring in connection with chronic caries of bone, etc. In none of these were there any organisms. Four, somewhat chronic (lasting weeks), following diseases allied to, or complicated with, forms of blood poisoning, all contained micrococci. Sixty-five were acute, and every one contained micrococci. None of these abscesses had been opened, and the pus was taken with a needle with the greatest care. To ascertain the influence of the pus alone he injected from one to ten minims of the pus from the cold abscesses into the backs of guinea-pigs, white mice, and wild mice in twenty instances, with the invariable result that no illness or abscess resulted. Within a week

the pus was dried up into a film pervaded with living cells, and within ten days this film became totally absorbed, so that when the animals were killed no trace of it remained, and the site of the injection was undiscoverable. In every instance well-marked disease was set up where injections were made from the pus of acute abscesses. The conclusions that must be drawn from such observations as these are confirmed by clinical observations.

There is not the acute character of the symptoms produced by these abscesses that would be expected where pyogenic organisms are at work. High temperature, as a rule, and rapid formation and burrowing are not found.

A careful study of the temperatures of patients suffering with tuberculous joint diseases, being treated by the same methods, shows that the temperature in abscess and non-abscess cases is about the same. In the abscess cases that have not been interfered with, and in which the joints have had efficient mechanical protection, it has been found that the temperature was practically the same during the formation, after opening and while discharging, and after the closure or absorption of the abscess; the rectal temperature, as a rule, ranging from 99° to 100° F. in the morning to 100° to 100.5° F. in the evening.

Where, then, are the indications for opening such an abscess when there is no condition that can be relieved by that opening that will compensate for the new and changed condition set up by such treatment?

Any operation which falls short of the entire removal of the disease converts a sterile condition into one where the difficulties of Nature in preventing the growth of the tubercle bacillus and preserving the patient's general health are greatly increased. The traumatic effect of the operation in lowering the vitality of healthy struc-



tures, rendering them less able to resist the spread of the disease, is illustrated by the many cases of tuberculous joint disease that are seen, which remain inactive for years, when upon the receipt of an injury they light up again with all the vigorous symptoms of the acute and typical process. The occurrence of pyogenic infection, which follows operations in so many instances, and often works the beginning of a long septic process, is another important factor in rendering the condition more favorable to the growth of the tubercle bacillus. Not only do the products of the growth of these organisms (pyogenic) affect the vitality of the healthy structures with which they come immediately in contact, but their absorption lowers the general health of the patient. So, aside from the septic condition produced by these organisms, which is serious in itself, the local tuberculous disease makes more rapid progress when they are present than when the skin is unbroken and the abscess contents are sterile.

If in a certain number of instances rapid infection of other organs occurs as a result of an operation, as undoubtedly happens after some cases of resection in hip disease, it is reasonable to suppose that in others the disease is disseminated, but the deposits occur in less sensitive and important tissues where a greater length of time is required for the characteristic symptoms to be produced, and, from the very fact that some time elapses before the symptoms appear indicating the involvement of other structures, it is very probable that the operation, though an important factor in the course of the spread of the disease, will be lost sight of as such.

It seems reasonable that such disastrous effects as have just been mentioned would occur more frequently in

cases where less complete operations are done for abscesses, when no attempt is made to remove all foci of the disease.

The many patients that are seen with abscess in connection with tuberculous joint disease that exists uninterfered with for months or even years, without the slightest evidence of the spread of the disease or of septic infection (the joint having efficient mechanical protection), illustrate how well Nature, undisturbed by operative procedures, can and does protect healthy structures from infection from the contents of such an abscess. Our knowledge of Nature's method of securing this protection may not be accurate or complete, but this does not alter the fact that such protection is secured, and that any method of treatment, whether operative or not, which interferes with that process, without substituting a better one, is not the best. This method is explained, to some extent, by pathological demonstration. Warren, of Boston (*Surgical Pathology*), says: "The walls of such abscesses have a characteristic appearance, being covered by the so-called tuberculous membrane, described originally by Volkmann. This opaque membrane is several millimetres thick, and is of a violet-gray or yellowish-brown color, and is very feebly vascular on its inner surface, which comes in contact with the pus. It contains innumerable clusters of miliary tubercles, so that it often appears to be formed by them. These are supported by a matrix of coagulated fibrin. This membrane can easily be scraped off with the finger, or even be removed by a stream of water, and frequently during operations it peels off from the surface in sheets several inches square. Below this membrane there is found a fibrous, indurated tissue which separates the abscess from the



surrounding healthy parts. This tissue is the result of a slight reactive inflammation and contains no tuberculous material." Senn (*Manual of Bacteriology*) says that "the granulation tissue produced by the chronic inflammatory process caused by the tubercle bacillus must be considered in the light of a protective wall to the surrounding healthy structures." In over a thousand cases carefully examined by Volkmann, on two occasions only did he find tubercles involving the surrounding healthy tissues.

While the course of a tuberculous abscess in connection with a joint under good mechanical protection is usually slow and unattended by acute symptoms, there are seen some cases, not many, in which there is a rectal temperature ranging from 100° to 101° F. in the morning and 101° to 102° F. in the evening for months, and in such instances the question of septic infection and the advisability of an operation suggest themselves. In the majority of instances such patients do not have the general appearance and characteristic symptoms that would be expected in septic cases of such long standing. Their appetites are usually good, and their general health does not seem to be affected more than can be explained by the existence of the tuberculous disease. These are the cases that it is most difficult to leave alone. One is very prone to feel that the existence of the fluctuating mass (the abscess), which is in connection with the diseased joint, is causing the trouble and adopt operative measures for its immediate relief, forgetting for the time the active tuberculous disease which is back of the abscess and entirely responsible for its existence, and upon the relief of which depends the relief of the abscess as well as other of its symptoms. It is difficult to understand how anything can be gained by opening the abscess in such a case,

if the diseased joint is efficiently and constantly protected. If any operation is done which falls short of removing all the diseased tissues present, there is simply an avenue of communication opened up between the diseased joint and the external surface. The activity of the underlying disease will not be lessened or its course shortened by such treatment.

The size and location of such an abscess, unless the functions of vital organs are being interfered with (and this seldom occurs), are of little importance, the slow formation and gradual development being the most important factors in allowing time for Nature to increase the means of protecting healthy structures from infection. If there were the rapid formation and burrowing in the tuberculous abscess that are seen in the acute pyogenic abscess, Nature's efforts to protect healthy structures from infection would be helpless. It therefore appears justifiable to reason that, when a sufficient means of protection exists, any procedure which disturbs it, such as incisions, scraping of the sac, or more extensive operations, as advised by many, will, in proportion to the amount of healthy structures exposed and the amount of diseased tissue left at its original site, render Nature equally helpless to protect the healthy structures from infection and to prevent the spread of the disease.

Allow such an abscess to pursue its own course undisturbed by any operative procedure, and as it increases the protecting wall surrounding its contents increases with sufficient rapidity to meet the increasing demands for protection, the contents coming gradually nearer the surface, and if spontaneous absorption does not take place a spontaneous opening occurs. The conditions here are very slightly changed. The abscess wall is left undis-

turbed, with simply a small opening out of which the contents of the abscess are slowly discharged. There is the exposure of no freshened surface to infection, either with the tubercle bacillus or with pyogenic bacteria. When there is pyogenic infection it is in most instances so slight that it is readily overcome by Nature unaided. The difference in the picture presented by an abscess pursuing such a course and that of one which has been opened and curetted thoroughly, having left as its walls healthy bleeding tissues as a ready field for infection with the tubercle bacillus and pyogenic bacteria, will be readily appreciated, and the fact realized that absolutely nothing has been gained by such treatment. The slow and gradual emptying of the abscess through the small opening (which has occurred spontaneously) is an advantage, as it lessens the risk of septic infection.

When the temperature goes up after spontaneous opening, and to a degree indicative of a considerable amount of infection, it has been noticed that this usually occurs when the abscess cavity is emptied rapidly and completely, thus exposing the whole abscess cavity suddenly, and that the opening is situated so that the free discharge of the re-accumulated material which is infected from without is interrupted. For this a counter opening may be indicated. A few irrigations in such cases help Nature to get control of the situation, and the temperature returns and remains at from 99° to 100° F., nothing else being indicated but simple external dressing. In the great majority of cases irrigation is not needed, as it will be found that the constant irritation and freshening of surface in the abscess cavity, which is exposed to infection, caused by such treatment continued for any considerable length of time is sufficient to cause the tem-



perature to remain higher and the discharge to decrease less rapidly than when the abscess is left absolutely alone.

The discouraging feature of cases sometimes seen of sinuses discharging for years, which have been left absolutely alone, is not so much the discharging sinuses as the actively progressive tuberculous bone disease underlying them, and the failure of the abscess to heal in such cases is due to the active and unrelieved tuberculous disease, and in no way due to the fact that the sinuses were not operated upon, as when such treatment is pursued the spread of the disease is encouraged and the risk from sepsis increased.

In suggesting a plan of treatment other than operative for abscess in connection with tuberculous joint disease, it may be well to present some statistics of results obtained by both methods of treatment. I have been able to obtain the report of but one group of cases showing the results of the non-interference plan; and in the statistics showing the results obtained by operation it has been thought fair to make use only of those cases treated under the most modern and improved technics, and as far as possible with the distinct object in view of testing this method.

Watson Cheyne (*Tuberculosis of Bones and Joints*) reports twenty-five cases of abscess in connection with hip-joint disease, treated by himself and Lord Lister, by aseptic incision and drainage, in which seventy-two per cent. of the patients were cured, twenty-four per cent. were improved, and four per cent. died. In a second group of fifty-eight cases of abscess in connection with spinal disease, forty-nine remained aseptic from first to last; only these are used, of which thirty-eight, or 77.5 per cent., had healed, while eight had not healed, and in

five, or 13.1 per cent., the patients had died. In a third group of sixty-eight cases of abscess connected with disease of the six larger joints, drainage alone was employed in forty-two, in eighteen partial arthrectomy was performed, and in eight simple arthrotomy. Of these sixty-eight cases fifty, or 73.5 per cent., had healed when the statistics were compiled, and three patients, or 4.4 per cent., had died, leaving twenty-two per cent. not healed. The length of time required for healing when aseptic drainage was employed was from eight to twelve months. Lovett and Goldthwaite (*Transactions of the American Orthopædic Association*, vol. ii) say that "the operative treatment of abscess was used to the exclusion of every other method in the Children's Hospital, Boston, from 1884 to 1888, the object being to test the value of such treatment, and during this time sixty-three cases were treated." In twenty of these cases the abscess closed, in twenty-three it remained open, with one or more sinuses, and twenty patients died. The length of time required for closure of the abscess was from six months to four years, although in most instances it occurred within a year or eighteen months.

Martin has reported (*Omaha Clinic*, December, 1894) 208 cases of hip-joint disease treated at the Hospital for the Ruptured and Crippled, New York, and of 121 of the abscesses treated by aspiration, incisions, etc., 62 patients were cured, 42 were not cured, and 16 died. Of the 42 not cured, the prognosis was absolutely unfavorable in 20, and the termination of the 23 remaining cases was not known. A summary of the entire number of cases here quoted shows a total of 326, 188, or 57.65 per cent., of which were cured, 93, or 28.83 per cent., were not cured, and 45, or 13.8 per cent., of the patients died.

Shaffer, in the *New York Medical Journal* of February 29, 1896, states that no tuberculous abscesses have been operated upon in the Orthopædic Hospital during the past four years, the object being to test the value of absolute non-interference. The abscesses were allowed to open spontaneously, if they opened at all, and only the simplest dressings were used during their entire course, but every attention was given to the detail of applying efficient mechanical protection to the diseased joint.

Of twenty-nine abscesses so treated, eight, or 27.58 per cent., underwent complete absorption; nineteen, or 65.51 per cent., after spontaneous opening, closed after a period ranging from two to twenty-one months, and in two, or 6.98 per cent., there were still small sinuses discharging a few drops daily.

It will be noticed that 27.58 per cent. of the abscesses in Shaffer's cases were completely absorbed, in all 93.09 per cent. cured, and that there was no death.

In Cheyne's group of twenty-five cases which show the best results, only seventy-two per cent. were cured, twenty-four per cent. improved, and four per cent. died.

In Lovett and Goldthwaite's sixty-three cases it is stated that "there was no case of anything approaching septicæmia, so sepsis can not explain the high mortality. Four patients died of tuberculous meningitis, two of phthisis, and six of amyloid degeneration of the viscera.

With the accumulated evidence that the operative treatment of these abscesses is not satisfactory, as shown by the three hundred and twenty-six cases here referred to, of which only 57.65 per cent. were cured, and with the fact demonstrated by pathological investigation and clinical observation that such an abscess is not due to the same cause as that of a pyogenic abscess and



does not produce the same symptoms, it does seem that the most rational treatment is that which is devoted to the relief of the diseased joint, the underlying and only cause of the abscess; and when this is accomplished by the constant application of efficient mechanical protection to the diseased joint, and at the same time good hygienic conditions are brought to bear upon the treatment of the case, it will be found that the abscesses in connection with such disease in most instances need no operation, being of secondary importance as regards the patient's immediate comfort or ultimate recovery and terminating most favorably when left absolutely alone.

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